## WHAT IS CLAIMED IS:

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## 1. A compound of formulae (I) or (II):

and pharmaceutically acceptable salts thereof wherein:

 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

 $R^5$  is independently elected at each occurrence from the group: H,  $C(=0)OR^{18}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$ ; and heterocycle substituted with 0-5  $R^{13}$ ;

X is selected from the group:  $BR^6R^7$ , C(=0),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=0)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=0)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and 0;  $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from

the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^8$  is selected from the group:  $OR^{14}$ ,  $C(=O)R^{14}$ ,  $S(=O)_2R^{14}$  and  $P(=O)(OR^{14})$ ;

- R° is selected from the group:  $OR^{14}$ ,  $NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16}$ ;  $R^{10}$ ,  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted with 0-3  $R^{17}$ ;
- 10  $R^{13}$  is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)OR<sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SR<sup>18</sup>, SOR<sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup>, CH<sub>2</sub>OR<sup>18</sup>, CH<sub>3</sub> and NHC(=S)NHR<sup>18</sup>;
- $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group: hydrogen,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ ; substituted with 0-5  $R^{13}$ ;
  - or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^{17}$  is independently selected at each occurrence from the group: H, OH, NHR  $^{18}$ , C(=0)R  $^{18}$ , OC(=0)R  $^{18}$ , OC(=0)OR  $^{18}$ , C(=0)NR  $_2^{18}$ , PO  $_3$ R  $_2^{18}$ , SR  $^{18}$ , SOR  $^{18}$ , SOR  $_2^{18}$ , NHC(=0)R  $^{18}$ , NHC(=0)NHR  $^{18}$  and NHC(=S)NHR  $^{18}$ ; and

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1-C_6$  alkyl, benzyl and phenyl;

with the proviso that when said compound is of formula (I) and X is  $P(=0)R^9$ , A is not  $CH_2$ .

2. A compound of Claim 1, wherein: X is selected from the group:  $NR^8$ ,  $PR^9$  and  $P(=0)R^9$ ; A is  $CH_2$ ;

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 $R^8$  is selected from the group:  $OR^{14}$ ,  $C(=O)R^{14}$  and  $S(=O)_2R^{14}$ ; and  $R^9$  is  $CH_2NR^{15}R^{16}$ .

3. A compound of Claim 2 of formula (II), wherein:
X is P(=0)OH;

A is CH,;

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 $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_{n}$ -, wherein: n is 2 or 3;

10  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_5$  alkyl substituted with 0-3  $R^{17}$  and aryl substituted with 0-1  $R^{17}$ ;

 $R^{17}$  is independently selected at each occurrence from the group: H, OH,  $NHR^{18}$ ,  $C(=0)R^{18}$ ,  $OC(=0)R^{18}$ ,  $OC(=0)OR^{18}$ ,  $C(=0)OR^{18}$ ,  $C(=0)NR_2^{18}$ ,  $PO_3R_2^{18}$ ,  $SO_2R^{18}$ ,  $NHC(=0)R^{18}$ ,

NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and

 $R^{18}$  is independently selected at each occurrence from the group: H and  $C_1-C_3$  alkyl.

- 20 4. A compound of Claim 3, wherein:
  - $R^1,\ R^2,\ R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH,\ CH_2PO_3H_2$  and  $CH_2-heterocycle$  substituted with 0-3  $R^{13};$  and
- $R^{13}$  is independently selected at each occurrence from the group: H, OH,  $NH_2$ , COOH,  $PO_3H_2$ ,  $CH_2OH$ ,  $CH_3$  and  $SO_3H$ .
  - 5. A radiopharmaceutical of formulae (III) or (IV):

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and pharmaceutically acceptable salts thereof, wherein: M is selected from the group:  $^{64}$ Cu,  $^{67}$ Cu,  $^{67}$ Ga,  $^{68}$ Ga,  $^{99m}$ Tc,  $^{111}$ In,  $^{90}$ Y,  $^{149}$ Pr,  $^{153}$ Sm,  $^{159}$ Gd,  $^{166}$ Ho,  $^{169}$ Yb,  $^{177}$ Lu,  $^{186}$ Re and  $^{188}$ Re;  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from:  $C_1$ - $C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2$ - $C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

10  $R^5$  is independently elected at each occurrence from: H,  $C(=0)OR^{18}$ ,  $C(=0)OR^{23}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$  and heterocycle substituted with 0-5  $R^{13}$ ;

15 X is selected from the group:  $BR^6R^7$ , C(=O),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=O)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=O)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and O;  $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1 - C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2 - C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and orthoaryl substituted with 0-3  $R^{13}$ ;

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 $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=0)R^{14}$ ,  $S(=0)_2R^{14}$  and  $P(=0)(OR^{14})$ ;

 $R^9$  is selected from the group:  $OR^{14}$ ,  $NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16}$ ;

 $R^{10}$ ,  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted with 0-3  $R^{17}$ ;

R<sup>13</sup> is independently selected at each occurrence from the group: H, OH, OR<sup>23</sup>, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, OC(=0)OR<sup>23</sup>, C(=0)OR<sup>23</sup>, C(=0)OR<sup>23</sup>, C(=0)NR<sub>2</sub><sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, PO<sub>3</sub>R<sup>18</sup>R<sup>23</sup>, SR<sup>18</sup>, SR<sup>23</sup>, SOR<sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, SOR<sup>23</sup>, SO<sub>2</sub>R<sup>23</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup>, CH<sub>2</sub>OR<sup>18</sup>, CH<sub>2</sub>OR<sup>23</sup>, CH<sub>3</sub> and NHC(=S)NHR<sup>18</sup>;

 $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^{17}$  is independently selected at each occurrence from the group: H, OH,  $NHR^{18}$ ,  $C(=0)R^{18}$ ,  $OC(=0)R^{18}$ ,  $OC(=0)OR^{18}$ ,  $C(=0)OR^{18}$ ,  $C(=0)NR_2^{18}$ ,  $PO_3R_2^{18}$ ,  $SR^{18}$ ,  $SOR^{18}$ ,  $SO_2R^{18}$ ,  $NHC(=0)R^{18}$ ,  $NHC(=0)NHR^{18}$  and  $NHC(=S)NHR^{18}$ ;

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1$ - $C_6$  alkyl, benzyl and phenyl; and  $R^{23}$  is a bond to the metal M;

with the proviso that when said radiopharmaceutical is of formula (III) and X is  $P(=0)R^9$ , A is not  $CH_2$ .

6. A radiopharmaceutical of Claim 5, wherein: X is selected from the group:  $NR^8$ ,  $PR^9$  and  $P(=0)R^9$ ; A is  $CH_2$ ;  $R^8$  is selected from the group:  $OR^{23},\ OR^{14},\ C\,(=O)\,R^{14}$  and  $S\,(=O)_2R^{14};$  and  $R^9$  is  $CH_2NR^{15}R^{16}.$ 

7. A radiopharmaceutical of Claim 6 of formula (IV), wherein:

X is P(=O)OH;

A is CH,;

 $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2 or 3;

 $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_5$  alkyl substituted with 0-3  $R^{17}$  and aryl substituted with 0-1  $R^{17}$ ;

R<sup>17</sup> is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)OR<sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and

 $R^{18}$  is independently selected at each occurrence from the group: H and  $C_1 - C_3$  alkyl.

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- 8. A radiopharmaceutical of Claim 7, wherein:
- $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH$ ,  $CH_2PO_3H_2$  and  $CH_2$ -heterocycle substituted with 0-3  $R^{13}$ ; and
- 25  $R^{13}$  is independently selected at each occurrence from the group: H,  $OR^{23}$ ,  $OC(=O)OR^{23}$ ,  $C(=O)OR^{23}$ ,  $PO_3R^{18}R^{23}$ ,  $SR^{23}$ ,  $SO_2R^{23}$ ,  $SO_2R^{23}$ ,  $CH_2OR^{23}$ , OH,  $NH_2$ , COOH,  $PO_3H_2$ ,  $CH_2OH$ ,  $CH_3$  and  $SO_3H$ .
- 9. A MRI contrast agent of the formulae (V) or (VI):

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and pharmaceutically acceptable salts thereof, wherein:

M is a paramagnetic metal ion of atomic number selected from the group: 21-29, 42-44 and 58-70;

 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

10  $R^5$  is independently elected at each occurrence from: H,  $C(=0)OR^{18}$ ,  $C(=0)OR^{23}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$  and heterocycle substituted with 0-5  $R^{13}$ ;

15 X is selected from the group:  $BR^6R^7$ , C(=O),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=O)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=O)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and 0;  $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and orthoaryl substituted with 0-3  $R^{13}$ ;

with  $0-3 R^{17}$ ;

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 $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=0)R^{14}$ ,  $S(=0)_2R^{14}$  and  $P(=0)(OR^{14})$ ;

 $R^9$  is selected from the group:  $OR^{14},\ NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16};$   $R^{10},\ R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17},\ C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted

 $R^{13}$  is independently selected at each occurrence from the group: H, OH,  $OR^{23}$ ,  $NHR^{18}$ ,  $C(=0)R^{18}$ ,  $OC(=0)R^{18}$ ,  $OC(=0)OR^{18}$ ,  $OC(=0)OR^{23}$ ,  $C(=0)OR^{23}$ ,  $C(=0)OR^{23}$ ,  $C(=0)NR_2^{18}$ ,  $PO_3R_2^{18}$ ,  $PO_3R$ 

 $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^{17}$  is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)OR<sup>18</sup>, C(=0)NR<sub>2</sub><sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SR<sup>18</sup>, SOR<sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>;

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1$ - $C_6$  alkyl, benzyl and phenyl; and  $R^{23}$  is a bond to the metal M;

with the proviso that when said MRI contrast agent is of formula (V) and X is  $P(=0)R^9$ , A is not  $CH_2$ .

10. A MRI contrast agent of Claim 9, wherein:

X is selected from the group: NR<sup>8</sup>, PR<sup>9</sup> and P(=O)R<sup>9</sup>;

A is CH<sub>2</sub>;

 $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=0)R^{14}$  and  $S(=0)_2R^{14}$ ; and  $R^9$  is  $CH_2NR^{15}R^{16}$ .

5 11. A MRI contrast agent of Claim 10 of formula (VI), wherein:

X is P(=0)OH;

A is CH,;

 $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2 or 3;

 $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_5$  alkyl substituted with 0-3  $R^{17}$  and aryl

substituted with 0-1 R17;

R<sup>17</sup> is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)NR<sub>2</sub><sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and

 $\ensuremath{R^{^{18}}}$  is independently selected at each occurrence from the group: H and  $\ensuremath{C_1-C_3}$  alkyl.

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- 12. A MRI contrast agent of Claim 11, wherein:
- $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH$ ,  $CH_2PO_3H_2$  and  $CH_2$ -heterocycle substituted with 0-3  $R^{13}$ ; and
- 25  $R^{13}$  is independently selected at each occurrence from the group: H,  $OR^{23}$ ,  $OC(=0)OR^{23}$ ,  $C(=0)OR^{23}$ ,  $PO_3R^{18}R^{23}$ ,  $SR^{23}$ ,  $SOR^{23}$ ,  $SO_2R^{23}$ ,  $CH_2OR^{23}$ , OH,  $NH_2$ , COOH,  $PO_3H_2$ ,  $CH_2OH$ ,  $CH_3$  and  $SO_3H$ .
- 30 13. A conjugate of the formula:

 $C_{n}-L_{n}-W$ ,

and pharmaceutically acceptable salts thereof,

wherein:

C<sub>h</sub> is a chelator of formulae (VII) or (VIII):

wherein:

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 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

 $R^5$  is independently elected at each occurrence from the group: H,  $C(=0)OR^{18}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$  and heterocycle substituted with 0-5  $R^{13}$ ;

X is selected from the group:  $BR^6R^7$ , C(=0),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=0)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=0)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and 0;  $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from

the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^8$  is selected from the group:  $OR^{14}$ ,  $C(=0)R^{14}$ ,  $S(=0)_2R^{14}$  and  $P(=0)(OR^{14})$ ;

R° is selected from the group:  $OR^{14}$ ,  $NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16}$ ;  $R^{10}$ ,  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted with 0-3  $R^{17}$ ;

10  $R^{13}$  is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)OR<sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SR<sup>18</sup>, SOR<sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)R<sup>18</sup>

 $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group: hydrogen,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $\rm R^{17}$  is independently selected at each occurrence from the group: H, OH, NHR  $^{18}$ , C(=0)R  $^{18}$ , OC(=0)R  $^{18}$ , OC(=0)OR  $^{18}$ , C(=0)OR  $^{18}$ , C(=0)NR  $_2^{18}$ , PO  $_3$ R  $_2^{18}$ , SR  $^{18}$ , SOR  $^{18}$ , SOR  $_2^{18}$ , NHC(=0)R  $^{18}$ , NHC(=0)NHR  $^{18}$ , NHC(=S)NHR  $^{18}$  and a bond to  $\rm L_n$ ;

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1$ - $C_6$  alkyl, benzyl, phenyl and a bond to  $L_n$ ;

L is a linking group of formula:

$$L^{1}-[Y^{1}(CR^{19}R^{20})f(Z^{1})f''Y^{2}]f'-L^{2},$$

wherein:

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$$\begin{array}{l} \mathtt{L}^1 \text{ is } - [\,(\mathtt{CH}_2)_{\,g}\mathtt{Z}^1\,]_{\,g\,'} - (\mathtt{CR}^{^{19}}\mathtt{R}^{^{20}})_{\,g\,''} -; \\ \\ \mathtt{L}^2 \text{ is } - (\mathtt{CR}^{^{19}}\mathtt{R}^{^{20}})_{\,g\,''} - [\,\mathtt{Z}^1(\mathtt{CH}_2)_{\,g}]_{\,g\,'} -; \end{array}$$

```
g is independently 0-10;
                       g' is independently 0-1;
                       g" is independently 0-10;
                       f is independently 0-10;
                       f' is independently 0-10;
  5
                       f" is independently 0-1;
                       y and y, at each occurrence, are independently
                       selected from the group: a bond, O, NR<sup>20</sup>, C=O, C(=O)O,
                       OC(=0)O, C(=0)NH-, C=NR^{2}, S, SO, SO_{2}, NHC(=0),
                        (NH)_2C(=0) and (NH)_2C=S;
10
                       R^{19} and R^{20} are independently selected at each occurrence
                       from the group: H, C_1-C_{10} alkyl substituted with 0-5
                       R and alkaryl wherein the aryl is substituted with 0-5
                       R<sup>21</sup>;
                       R is independently selected at each occurrence from
15
                       the group: NHR^{22}, C(=0)R^{22}, OC(=0)R^{22}, OC(=0)OR^{22}, O
                       NHC(=0)NHR<sup>22</sup>, NHC(=S)NHR<sup>22</sup> and a bond to W;
                        R<sup>22</sup> is independently selected at each occurrence from
                        the group: H, C_1-C_6 alkyl, benzyl, phenyl and a bond to
20
                        W; and
                        W is a biologically active molecule selected from the
                        group: IIb/IIIa receptor ligands, fibrin binding
                        peptides, leukocyte binding peptides, chemotactic
                        peptides, somatostatin analogs, selectin binding
25
                        peptides, vitronectin receptor antagonists and tyrosine
                        kinase inhibitors;
                        with the proviso that when said chelator is of formula
                         (VII) and X is P(=0)R^9, A is not CH_2.
 30
                                       A conjugate of Claim 13, wherein:
                         14.
                        X is selected from the group: NR<sup>8</sup>, PR<sup>9</sup> and P(=O)R<sup>9</sup>;
                        A is CH,;
```

```
R^8 is selected from the group: OR^{23}, OR^{14}, C(=O)R^{14} and
            S(=0)_{2}R^{14};
           R<sup>9</sup> is CH<sub>2</sub>NR<sup>15</sup>R<sup>16</sup>;
            g is independently 0-5;
            g" is independently 0-5;
5
            f is independently 0-5;
            f' is independently 0-5;
            y and y, at each occurrence, are independently
            selected from the group: a bond, O, NR^{20}, C=O, C(=O)O,
            OC(=0)0, C(=0)NH-, SO, SO<sub>2</sub>, NHC(=0), (NH)<sub>2</sub>C(=0) and
10
            (NH)_2C=S; and
            R is independently selected at each occurrence from
            the group: NHR^{22}, C(=0)R^{22}, OC(=0)R^{22}, OC(=0)OR^{22}, C(=0)OR^{22}, C(=0)NR_{2}^{22}, SO_{2}R^{22}, NHC(=0)R^{22}, NHC(=0)NHR^{22},
            NHC(=S)NHR<sup>22</sup> and a bond to W.
15
            15. A conjugate of Claim 14 wherein:
            Ch is a chelator of formula (VIII);
            X is P(=O)OH;
20
            A is CH,;
            Q^1, Q^2, and Q^3 are independently -(CR<sup>11</sup>R<sup>12</sup>)<sub>n</sub>-, wherein: n
            is 2 or 3;
            R^{11} and R^{12} are independently selected from the group:
            H, C_1-C_5 alkyl substituted with 0-3 R^{17} and aryl
            substituted with 0-1 R17;
25
            R17 is independently selected at each occurrence from
            the group: H, OH, NHR^{18}, C(=0)R^{18}, OC(=0)R^{18}, OC(=0)OR^{18},
            C(=O)OR^{18}, C(=O)NR_{2}^{18}, PO_{3}R_{2}^{18}, SO_{2}R^{18}, NHC(=O)R^{18},
            NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and
            R18 is independently selected at each occurrence from
30
             the group: H and C_1-C_3 alkyl.
```

16. A conjugate of Claim 15, wherein:

 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH$ ,  $CH_2PO_3H_2$  and  $CH_2-heterocycle$  substituted with 0-3  $R^{13}$ ; and

 $R^{13}$  is independently selected at each occurrence from the group: H, OH, NH, COOH,  $PO_3H_2$ ,  $CH_2OH$ ,  $CH_3$  and  $SO_3H$ .

17. A radiopharmaceutical of the formula:

$$M-C_{p}-L_{n}-W$$
,

and pharmaceutically acceptable salts thereof, wherein,

M is selected from the group:  $^{64}$ Cu,  $^{67}$ Cu,  $^{67}$ Ga,  $^{68}$ Ga,  $^{99m}$ Tc,  $^{111}$ In,  $^{90}$ Y,  $^{149}$ Pr,  $^{153}$ Sm,  $^{159}$ Gd,  $^{166}$ Ho,  $^{169}$ Yb,  $^{177}$ Lu,  $^{186}$ Re and  $^{188}$ Re; C<sub>b</sub> is a chelator of formulae (IX) or (X):

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wherein:

 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

 $R^5$  is independently elected at each occurrence from the group: H,  $C(=0)OR^{18}$ ,  $C(=0)OR^{23}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$  and heterocycle substituted with 0-5  $R^{13}$ ;

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X is selected from the group:  $BR^6R^7$ , C(=0),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=0)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=0)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and O;

 $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3$ - $C_{10}$  alkyl substituted with 0-5  $R^{13}$  and orthoaryl substituted with 0-3  $R^{13}$ ;

15  $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=O)R^{14}$ ,  $S(=O)_2R^{14}$  and  $P(=O)(OR^{14})$ ;

 $R^9$  is selected from the group:  $OR^{14}$ ,  $NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16}$ ;  $R^{10}$ ,  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted with 0-3  $R^{17}$ ;

 $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^{17}$  is independently selected at each occurrence from the group: H, OH, NHR  $^{18}$ , C(=0)R  $^{18}$ , OC(=0)R  $^{18}$ , OC(=0)OR  $^{18}$ , C(=0)OR  $^{18}$ , C(=0)NR  $_2^{18}$ , PO  $_3$ R  $_2^{18}$ , SR  $^{18}$ , SOR  $^{18}$ , SOR  $^{18}$ , NHC(=0)R  $^{18}$ , NHC(=0)NHR  $^{18}$ , NHC(=S)NHR  $^{18}$  and a bond to  $L_{\rm n}$ ;

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1$ - $C_6$  alkyl, benzyl, phenyl and a bond to  $L_n$ ;

 $R^{23}$  is a bond to the metal M;

L is a linking group of formula:

 $L^{1}-[Y^{1}(CR^{19}R^{20})f(Z^{1})f''Y^{2}]f'-L^{2},$ 

wherein:

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 $L^{1}$  is  $-[(CH_{2})_{g}Z^{1}]_{g'}-(CR^{19}R^{20})_{g"}^{-};$ 

 $L^2$  is  $-(CR^{19}R^{20})_{g"}-[Z^1(CH_2)_g]_{g'}-;$ 

g is independently 0-10;

g' is independently 0-1;

q" is independently 0-10;

f is independently 0-10;

f' is independently 0-10;

f" is independently 0-1;

Y and Y, at each occurrence, are independently selected from the group: a bond, O, NR, C=O, C(=O)O, OC(=O)O, C(=O)NH-, C=NR, S, SO, SO2, NHC(=O), (NH)2C(=O) and (NH)2C=S;

 $R^{19}$  and  $R^{20}$  are independently selected at each occurrence from the group: H, C<sub>1</sub>-C<sub>10</sub> alkyl substituted with 0-5  $R^{21}$  and alkaryl wherein the aryl is substituted with 0-5  $R^{21}$ ;

R<sup>21</sup> is independently selected at each occurrence from the group: NHR<sup>22</sup>,  $C(=0)R^{22}$ ,  $OC(=0)R^{22}$ ,  $OC(=0)OR^{22}$ ,  $C(=0)OR^{22}$ ,  $C(=0)NR_{2}^{22}$ , C(=0

 $R^{22}$  is independently selected at each occurrence from the group: H,  $C_1-C_6$  alkyl, benzyl, phenyl and a bond to W; and

W is a biologically active molecule selected from the group: IIb/IIIa receptor ligands, fibrin binding peptides, leukocyte binding peptides, chemotactic peptides, somatostatin analogs, selectin binding peptides, vitronectin receptor antagonists and tyrosine kinase inhibitors;

with the proviso that when said chelator is of formula (IX) and X is  $P(=0)R^9$ , A is not  $CH_2$ .

18. A radiopharmaceutical of Claim 17, wherein:

X is selected from the group:  $NR^8$ ,  $PR^9$  and  $P(=0)R^9$ ;

15 A is CH<sub>2</sub>;

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 $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=0)R^{14}$  and  $S(=0)_{2}R^{14}$ ;

R<sup>9</sup> is CH,NR<sup>15</sup>R<sup>16</sup>;

g is independently 0-5;

g" is independently 0-5;

f is independently 0-5;

f' is independently 0-5;

 $y^1$  and  $y^2$ , at each occurrence, are independently selected from the group: a bond, O,  $NR^{20}$ , C=O, C(=O)O, OC(=O)O, C(=O)NH-, SO, SO<sub>2</sub>, NHC(=O), (NH)<sub>2</sub>C(=O) and (NH)<sub>2</sub>C=S; and

 $R^{^{21}}$  is independently selected at each occurrence from the group: NHR  $^{^{22}}$ , C(=0)R  $^{^{22}}$ , OC(=0)R  $^{^{22}}$ , OC(=0)OR  $^{^{22}}$ , C(=0)OR  $^{^{22}}$ , SO2R , NHC(=0)R  $^{^{22}}$ , NHC(=0)NHR  $^{^{22}}$ , NHC(=S)NHR and a bond to W.

19. A radiopharmaceutical of Claim 18, wherein:

Ch is a chelator of formula (X);

X is P(=0)OH;

A is CH2;

 $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n$ -, wherein: n is 2 or 3;

 $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_5$  alkyl substituted with 0-3  $R^{17}$  and aryl substituted with 0-1  $R^{17}$ ;

R<sup>17</sup> is independently selected at each occurrence from the group: H, OH, NHR<sup>18</sup>, C(=0)R<sup>18</sup>, OC(=0)R<sup>18</sup>, OC(=0)OR<sup>18</sup>, C(=0)OR<sup>18</sup>, PO<sub>3</sub>R<sub>2</sub><sup>18</sup>, SO<sub>2</sub>R<sup>18</sup>, NHC(=0)R<sup>18</sup>, NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and

 $R^{18}$  is independently selected at each occurrence from the group: H and  $C_1 - C_3$  alkyl.

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20. A radiopharmaceutical of Claim 19, wherein:

 $R^1,\ R^2,\ R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH,\ CH_2PO_3H_2$  and  $CH_2-heterocycle$  substituted with 0-3  $R^{13};$  and

20  $R^{13}$  is independently selected at each occurrence from the group: H,  $OR^{23}$ ,  $OC(=O)OR^{23}$ ,  $C(=O)OR^{23}$ ,  $PO_3R^{18}R^{23}$ ,  $SR^{23}$ ,  $SO_2R^{23}$ ,  $SO_2R^{23}$ ,  $CH_2OR^{23}$ , OH,  $NH_2$ , COOH,  $PO_3H_2$ ,  $CH_2OH$ , CH3 and  $SO_3H$ .

25 21. A MRI contrast agent of the formula:

$$M-C_n-L_n-W$$
,

and pharmaceutically acceptable salt thereof,

wherein:

M is a paramagnetic metal ion of atomic number selected from the group: 21-29, 42-44 and 58-70;

C<sub>h</sub> is a chelator of formulae (XI) or (XII):

wherein:

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 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^5$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^5$  and aryl substituted with 0-5  $R^5$ ;

 $R^5$  is independently elected at each occurrence from the group: H,  $C(=0)OR^{18}$ ,  $C(=0)OR^{23}$ ,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$ , aryl substituted with 0-5  $R^{13}$  and heterocycle substituted with 0-5  $R^{13}$ ;

X is selected from the group:  $BR^6R^7$ , C(=0),  $SiR^6R^7$ ,  $GeR^6R^7$ ,  $SnR^6R^7$ ,  $NR^8$ ,  $PR^9$ ,  $P(=0)R^9$ ,  $P(=S)R^9$ ,  $AsR^9$  and  $As(=0)R^9$ ;

A is selected from the group:  $CH_2$ ,  $NR^{10}$  and O;  $Q^1$ ,  $Q^2$ , and  $Q^3$  are independently  $-(CR^{11}R^{12})_n-$ , wherein: n is 2-5;

 $R^6$  and  $R^7$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or alternatively,  $R^6$  and  $R^7$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^8$  is selected from the group:  $OR^{23}$ ,  $OR^{14}$ ,  $C(=0)R^{14}$ ,  $S(=0)_2R^{14}$  and  $P(=0)(OR^{14})$ ;

 $R^9$  is selected from the group:  $OR^{14}$ ,  $NR^{15}R^{16}$  and  $CH_2NR^{15}R^{16}$ ;

 $R^{10}$ ,  $R^{11}$  and  $R^{12}$  are independently selected from the group: H,  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{17}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{17}$  and aryl substituted with 0-3  $R^{17}$ ;

 $R^{14}$ ,  $R^{15}$  and  $R^{16}$  are independently selected from the group:  $C_1-C_{10}$  alkyl substituted with 0-5  $R^{13}$ ,  $C_2-C_{10}$  alkenyl substituted with 0-5  $R^{13}$  and aryl substituted with 0-5  $R^{13}$ ;

or, alternatively, two  $R^{14}$  or  $R^{15}$  and  $R^{16}$  may be taken together to form a transannular bridge, said bridge selected from the group:  $C_3-C_{10}$  alkyl substituted with 0-5  $R^{13}$  and ortho-aryl substituted with 0-3  $R^{13}$ ;

 $R^{17} \text{ is independently selected at each occurrence from} \\ 20 \qquad \text{the group: } H, \text{ OH, NHR}^{18}, \text{ C(=0)R}^{18}, \text{ OC(=0)R}^{18}, \text{ OC(=0)OR}^{18}, \\ \text{ C(=0)OR}^{18}, \text{ C(=0)NR}_2^{18}, \text{ PO}_3^{R}_2^{18}, \text{ SR}^{18}, \text{ SOR}^{18}, \text{ SO}_2^{R}, \text{ NHC(=0)R}^{18}, \\ \text{NHC(=0)NHR}^{18}, \text{ NHC(=S)NHR}^{18} \text{ and a bond to L}_n; \\ \end{aligned}$ 

 $R^{18}$  is independently selected at each occurrence from the group: H,  $C_1\text{--}C_6$  alkyl, benzyl, phenyl and a bond to  $L_{\rm n};$ 

 $R^{23}$  is a bond to the metal M; L, is a linking group of formula:

$$L^{1}-[Y^{1}(CR^{19}R^{20})f(Z^{1})f''Y^{2}]f'-L^{2},$$

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wherein:

$$\begin{array}{l} \mathtt{L}^1 \text{ is } - [\,(\mathtt{CH}_2)_{\,g}\mathtt{Z}^1\,]_{\,g\,'} - (\mathtt{CR}^{^{19}}\mathtt{R}^{^{20}})_{\,g\,''}^{\,-}; \\ \\ \mathtt{L}^2 \text{ is } - (\mathtt{CR}^{^{19}}\mathtt{R}^{^{20}})_{\,g\,''} - [\,\mathtt{Z}^1(\mathtt{CH}_2)_{\,g}]_{\,g\,'}^{\,-}; \end{array}$$

A is CH2;

```
g is independently 0-10;
                        g' is independently 0-1;
                        q" is independently 0-10;
                        f is independently 0-10;
                        f' is independently 0-10;
  5
                        f" is independently 0-1;
                        y and y, at each occurrence, are independently
                        selected from the group: a bond, O, NR<sup>20</sup>, C=O, C(=O)O,
                        OC(=0)0, C(=0)NH-, C=NR, S, SO, SO2, NHC(=0),
                         (NH)_2C(=0) and (NH)_2C=S;
10
                        R^{19} and R^{20} are independently selected at each occurrence
                        from: H, C_1-C_{10} alkyl substituted with 0-5 R^{21} and
                        alkaryl wherein the aryl is substituted with 0-5 R<sup>21</sup>;
                        R is independently selected at each occurrence from
                        the group: NHR^{22}, C(=0)R^{22}, OC(=0)R^{22}, OC(=0)OR^{22}, C(=0)OR^{22}, C(=0)NR_{2}^{22}, C(=0)NR_{2}^{22}
15
                        NHC(=0)NHR^{22}, NHC(=S)NHR^{22} and a bond to W;
                        R<sup>22</sup> is independently selected at each occurrence from
                         the group: H, C_1-C_6 alkyl, benzyl, phenyl and a bond to
20
                        W; and
                         W is a biologically active molecule selected from the
                                             IIb/IIIa receptor ligands, fibrin binding
                         peptides, leukocyte binding peptides, chemotactic
                         peptides, somatostatin analogs, selectin binding
                         peptides, vitronectin receptor antagonists and tyrosine
25
                         kinase inhibitors
                         with the proviso that when said chelator is of formula
                          (XI) and X is P(=0)R^9, A is not CH,.
                                         A MRI contrast agent of Claim 21, wherein:
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```

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X is selected from the group:  $NR^8$ ,  $PR^9$  and  $P(=0)R^9$ ;

```
R^8 is selected from the group: OR^{23}, OR^{14}, C(=0)R^{14} and
                         S(=0)_{2}R^{14};
                         R<sup>9</sup> is CH<sub>2</sub>NR<sup>15</sup>R<sup>16</sup>;
                         g is independently 0-5;
                          g" is independently 0-5;
  5
                          f is independently 0-5;
                          f' is independently 0-5;
                          y and y, at each occurrence, are independently
                          selected from the group: a bond, O, NR^{20}, C=O, C(=O)O,
                          OC(=0)O, C(=0)NH-, SO, SO_2, NHC(=0), (NH)_2C(=0) and
10
                           (NH)_2C=S; and
                          R is independently selected at each occurrence from
                          the group selected from the group: NHR^{22}, C(=0)R^{22}, OC(=0)R^{22}, OC(=0)R^{22}, OC(=0)OR^{22}, OC(=0)OR^{22
                          NHC(=0)R^{22}, NHC(=0)NHR^{22}, NHC(=S)NHR^{22} and a bond to W.
15
                                         A MRI contrast agent of Claim 22, wherein:
                           Ch is a chelator of formula (XII);
                           X is P(=0)OH;
                           A is CH,;
20
                           Q^1, Q^2, and Q^3 are independently -(CR^{11}R^{12})_n-, wherein n:
                            is 2 or 3;
                            R^{11} and R^{12} are independently chosen from the group: H,
                           C_1-C_5 alkyl substituted with 0-3 R^{17} and aryl substituted
                            with 0-1 R^{17};
 25
                            R17 is independently selected at each occurrence from
                            the group: H, OH, NHR^{18}, C(=0)R^{18}, OC(=0)R^{18}, OC(=0)OR^{18},
                            C(=0)OR^{18}, C(=0)NR_{2}^{18}, PO_{3}R_{2}^{18}, SO_{2}R^{18}, NHC(=0)R^{18},
                            NHC(=0)NHR<sup>18</sup> and NHC(=S)NHR<sup>18</sup>; and
                            R^{18} is independently selected at each occurrence from
 30
                            the group: H and C_1-C_3 alkyl.
```

24. A MRI contrast agent of Claim 23, wherein:

 $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  are independently selected at each occurrence from the group: H,  $CH_2COOH$ ,  $CH_2PO_3H_2$ ,  $CH_2$ -heterocycle substituted with 0-3  $R^{13}$ ; and

 $R^{13}$  is independently selected at each occurrence from the group: H,  $OR^{23}$ ,  $OC(=O)OR^{23}$ ,  $C(=O)OR^{23}$ ,  $PO_3R^{18}R^{23}$ ,  $SR^{23}$ ,  $SOR^{23}$ ,  $SO_2R^{23}$ ,  $CH_2OR^{23}$ , OH,  $NH_2$ , COOH,  $PO_3H_2$ ,  $CH_2OH$ , CH3 and  $SO_3H$ .